U.S. Department of the Interior
Bureau of Land Management

Assessing reclamation and land use plan effectiveness:
Building a multi-scale monitoring program for Alaska Public Lands


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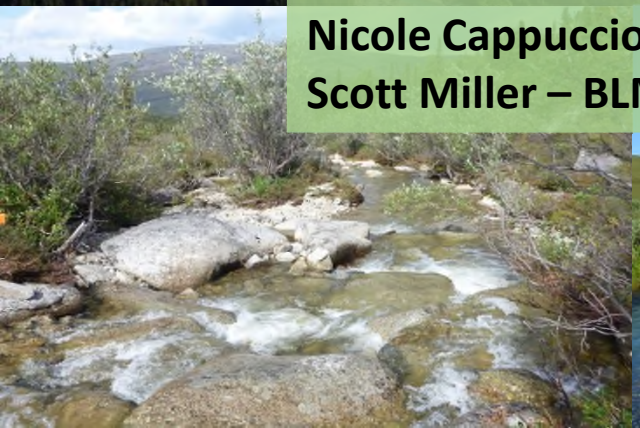

Aquatic habitat managed by BLM Alaska

- 118,000 miles of perennial stream and lotic riparian habitat
- 87% of the BLM's riverine resources
- Large majority are believed to be unaltered
- Need to characterize current conditions

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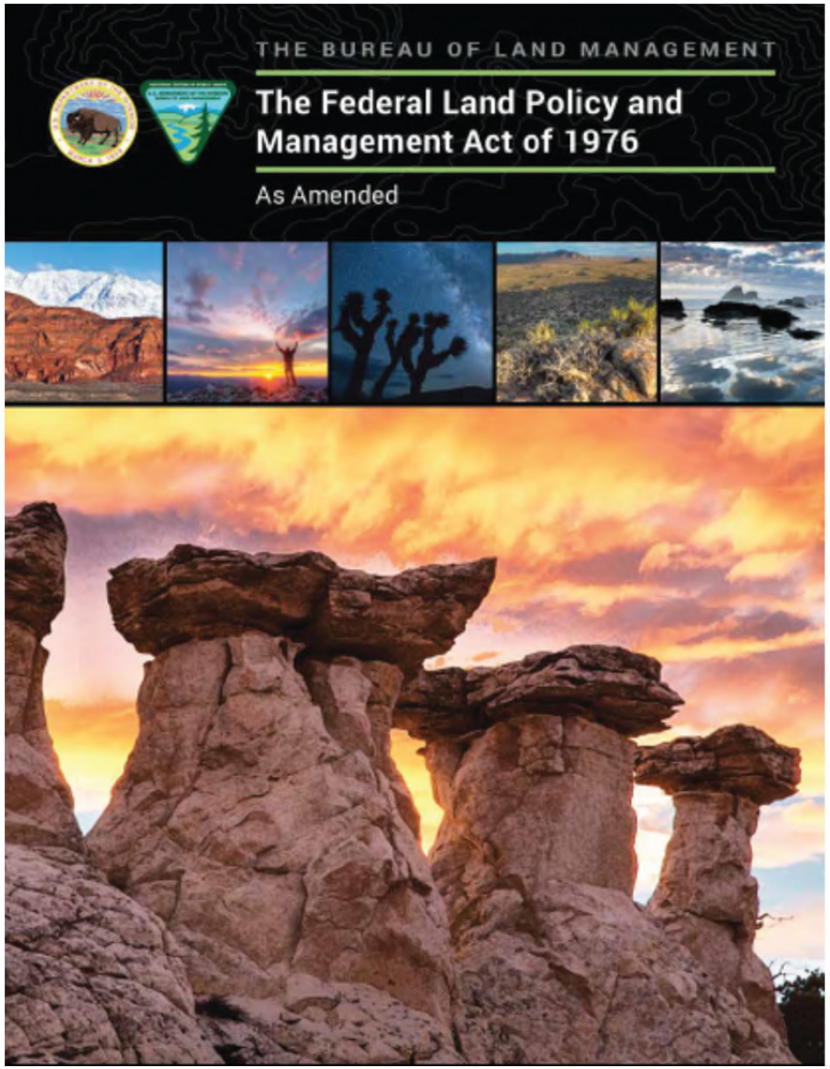
FLPMA – Multiple use and sustained yield

Congress directed the BLM in the Federal Land Policy and Management Act to manage public lands for **multiple use and sustained yield**



Multiple-use mandate









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Alaska Placer Mining

Active mining and stream in bypass channel

Post-reclamation

Stream abandoned in bypass channel

Historically mined stream channels

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Applications of the AIM Strategy to Reclamation

- 43 CFR 3809:
  - rehabilitation of fisheries habitat following reclamation
- H-3809-1:
  - "…rehabilitate to provide a stable channel form…"
- EIFO RMP ROD:
  - "Provide instream habitat complexity similar to that of pre-disturbance levels…"

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BLM's Aquatic AIM Strategy

Fundamentals of the AIM Strategy:

- Quantitative core indicators and methodologies that are standardized
- Statistically valid sample designs
- Integration of remote sensing technologies
- Electronic data capture

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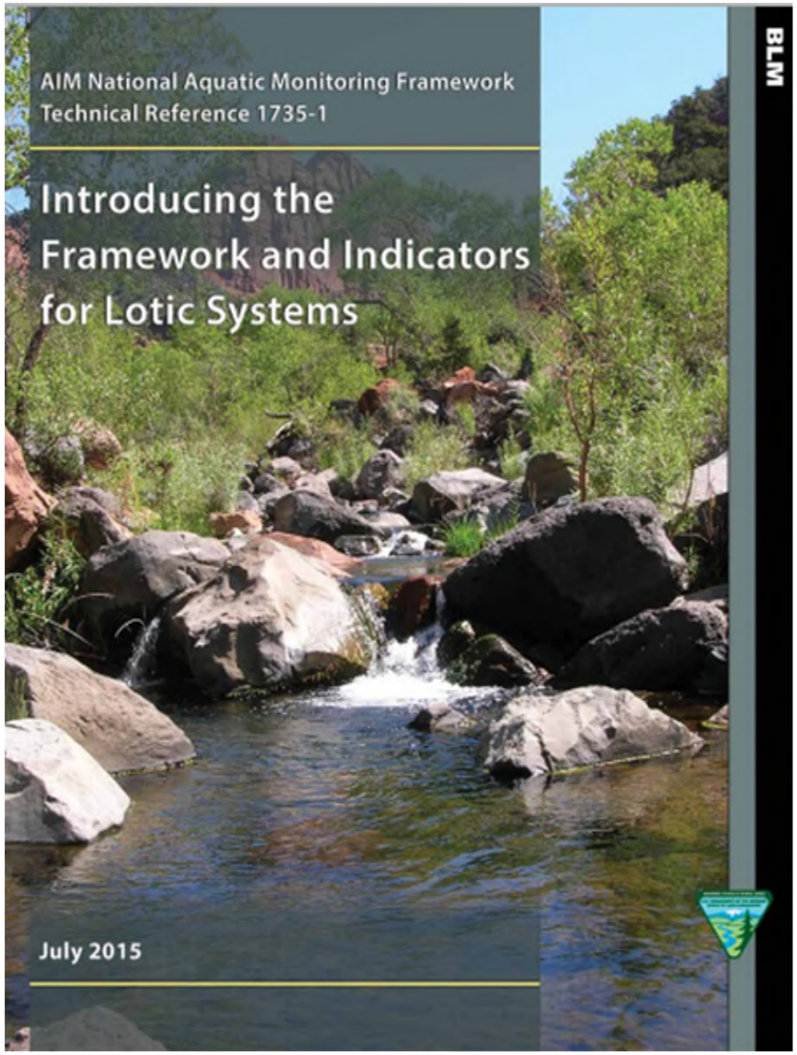
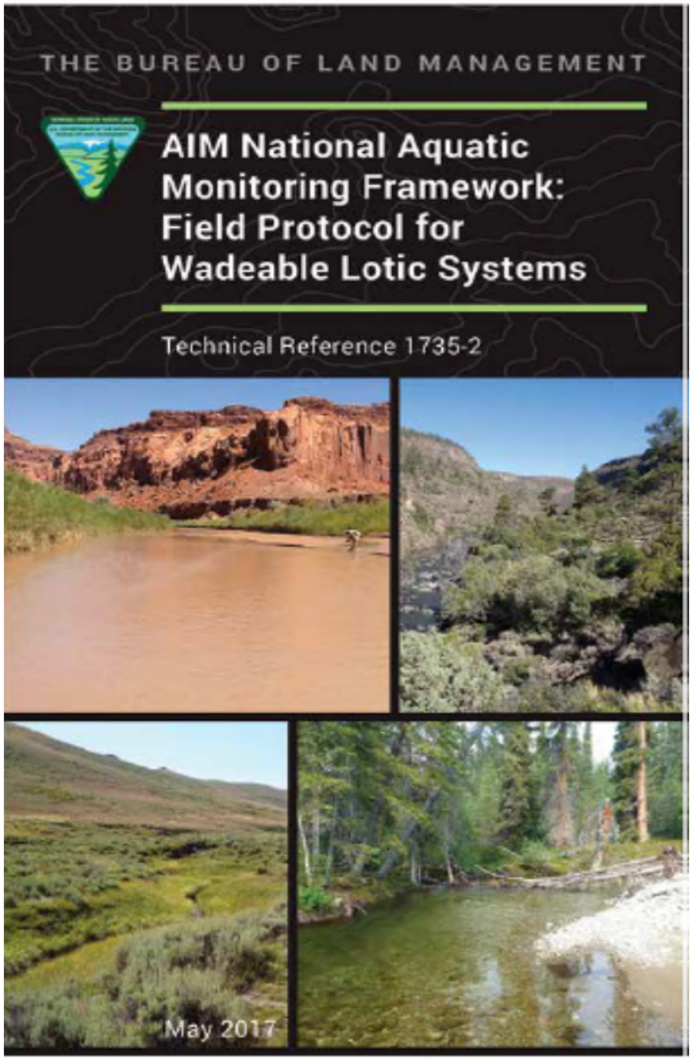
BLM's Aquatic AIM Strategy





Lentic Coming Soon!

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Aquatic Core Methods

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- pH
- Salinity
- Temperature
- Pool dimension / frequency
- Streambed particle size
- Bank stability and cover
- Floodplain connectivity
- Large woody debris
- Macroinvertebrates
- Riparian vegetation
- Canopy cover

Aquatic AIM Flexibility

Aquatic Contingent Methods

- Turbidity
- Instream habitat complexity
- Thalweg depth profile

Aquatic Supplemental Methods

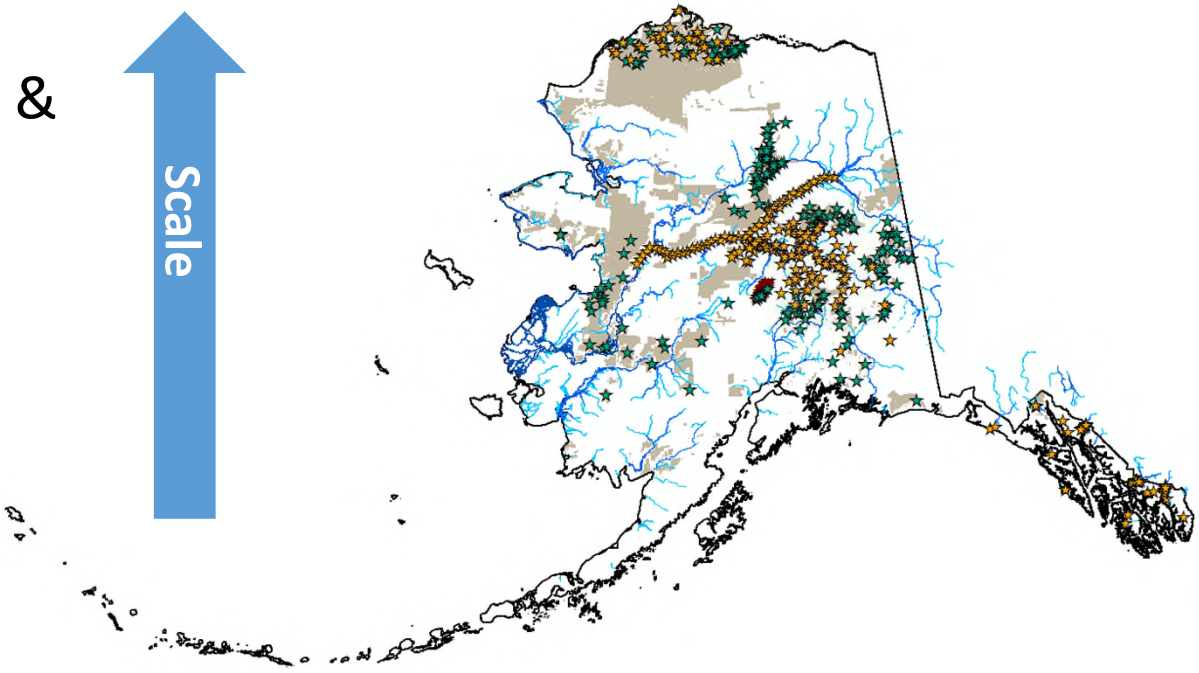
- eDNA
- Surveyed cross-section

BLM – AIM

AIM data – The need for multi-scalability

BLM multi-scale data needs:

- Permitted activities
- LUP development & assessment
- Ecoregional
- State-wide
- Bureau-wide
- Cross-agency



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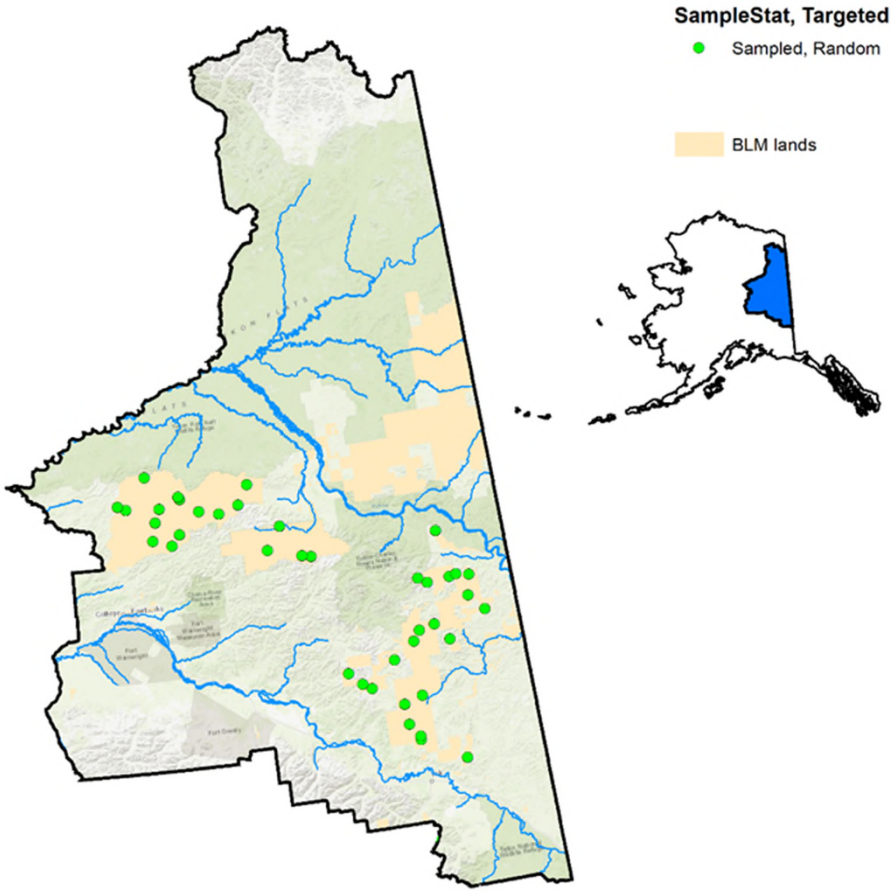
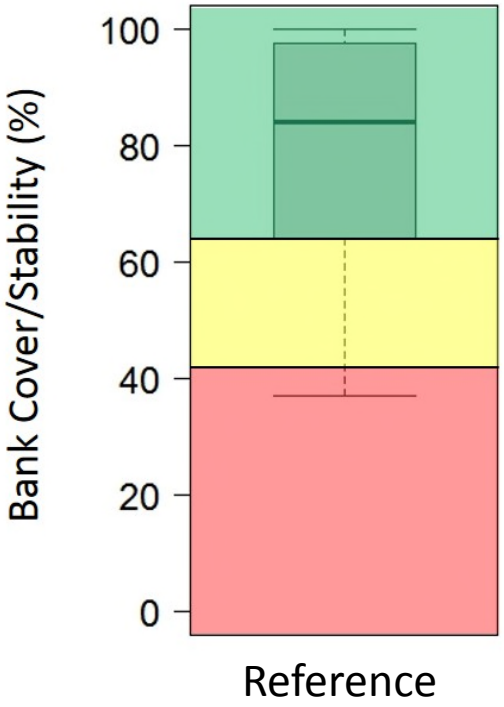
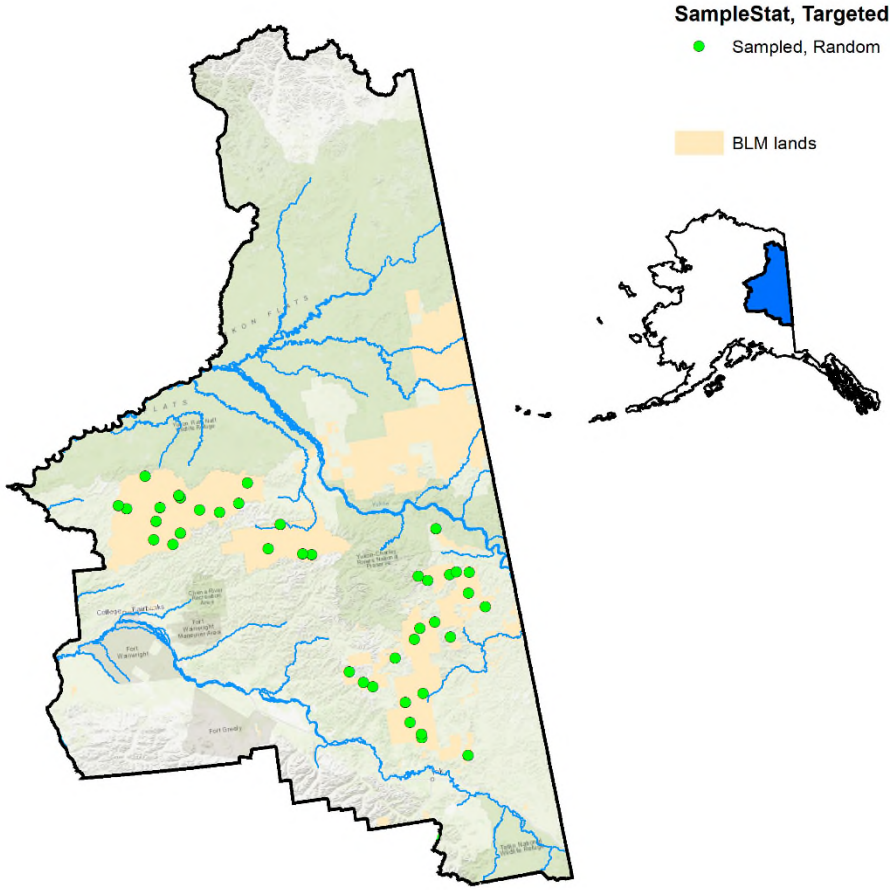


Eastern Interior Field Office: LUP development

- Random sampling to:
  - Establish baseline conditions and trend
  - Develop benchmarks
  - Assess RMP effectivenes





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Eastern Interior Field Office: LUP development

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Conceptual table depicting benchmarks for an RMP

Indicator	Predicted Response to Stress	Units	Benchmark	Percentile	Small Streams	Large Streams
Percent Overhead cover	Decrease	%	Moderate	25th	47.2	22.5
			Major	5th	26.1	11.5
Bank Overhead Cover	Decrease	%	Moderate	25th	69	55.1
			Major	5th	32.1	25.2
Veg Complexity	Decrease	None	Moderate	25th	1.03	0.99
			Major	5th	0.6	0.73
Bank Cover and Stability	Decrease	%	Moderate	25th	65.4	68
			Major	5th	55	59.2
Channel Incision	Increase	None	Moderate	75th	-0.09	0.11
			Major	95th	0.22	0.22
% Fines	Increase	%	Moderate	75th	45	44
			Major	95th	66	81

AIM data – multi scalability

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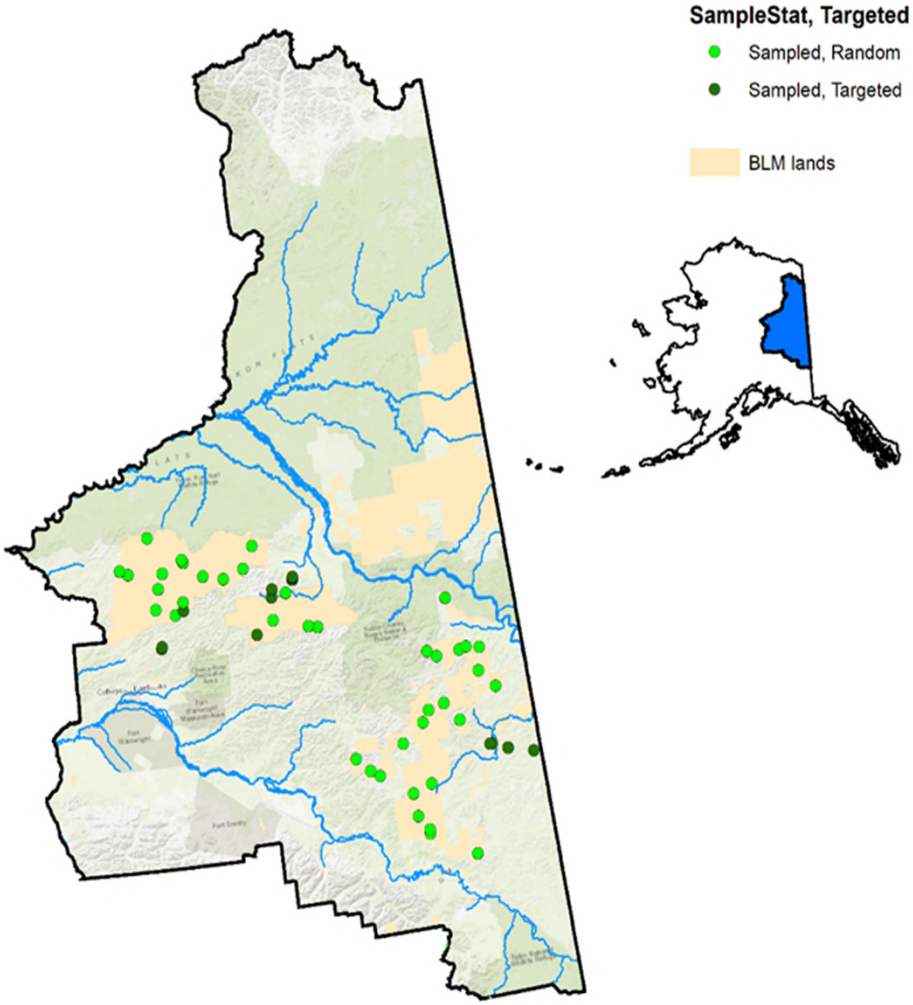

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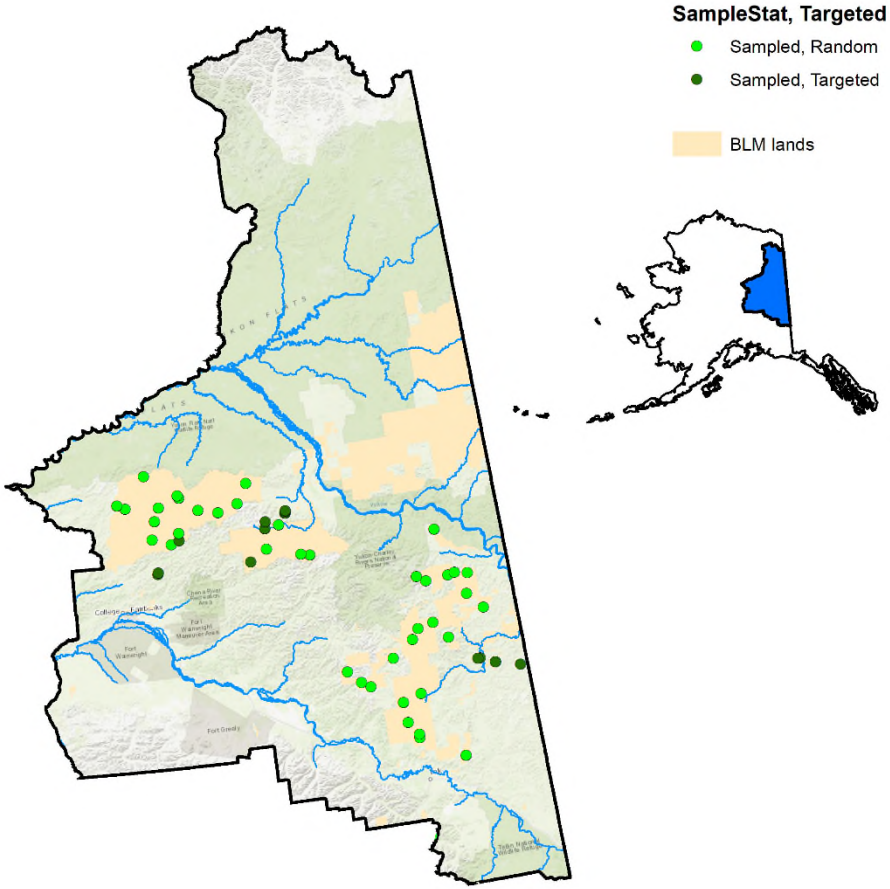
Eastern Interior Field Office: Placer Mining

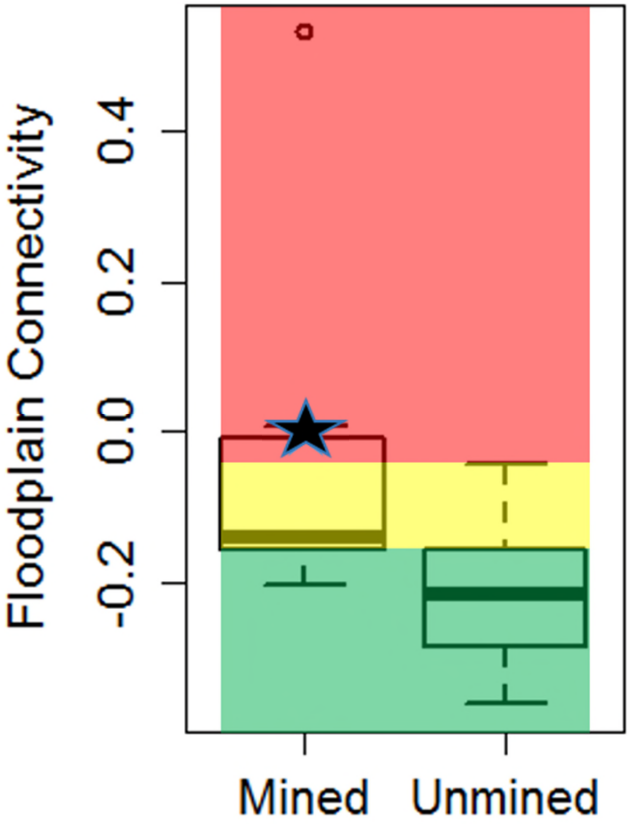
- Targeted sampling to:
  - Assess reclamation effectiveness using Aquatic AIM

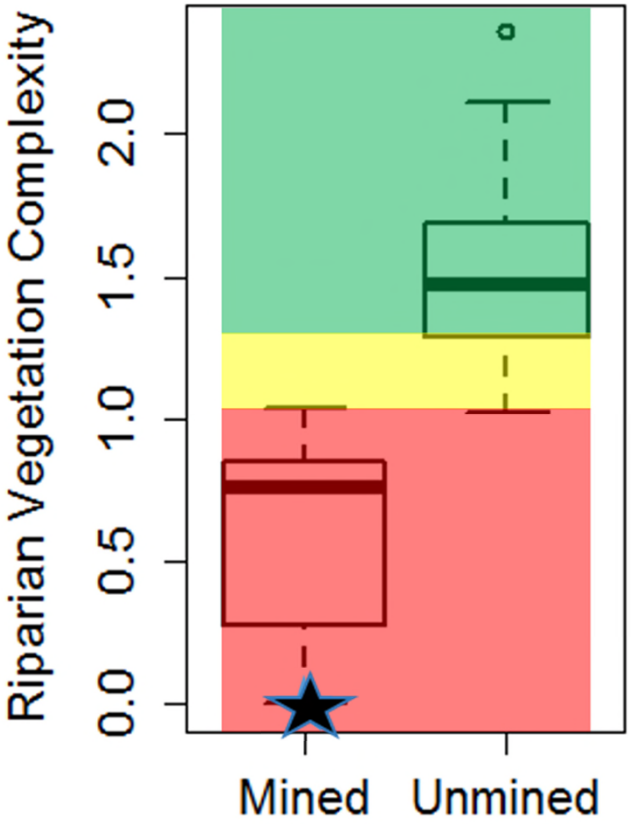


BLM – AIM

Eastern Interior Field Office: Placer Mining

What is the effectiveness of the operator's reclamation?





Franklin Creek – reclaimed 1 year ★

BLM – AIM

Eastern Interior Field Office: Placer Mining

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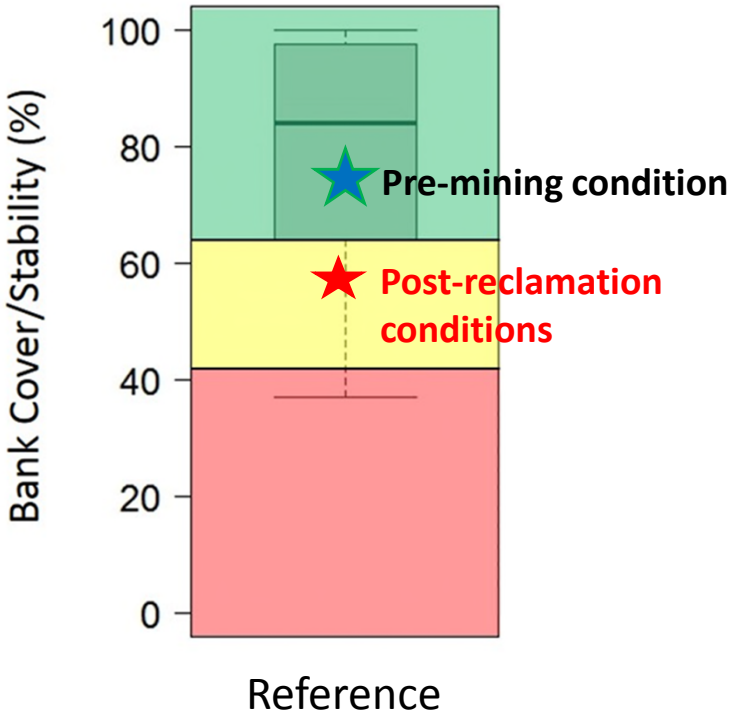

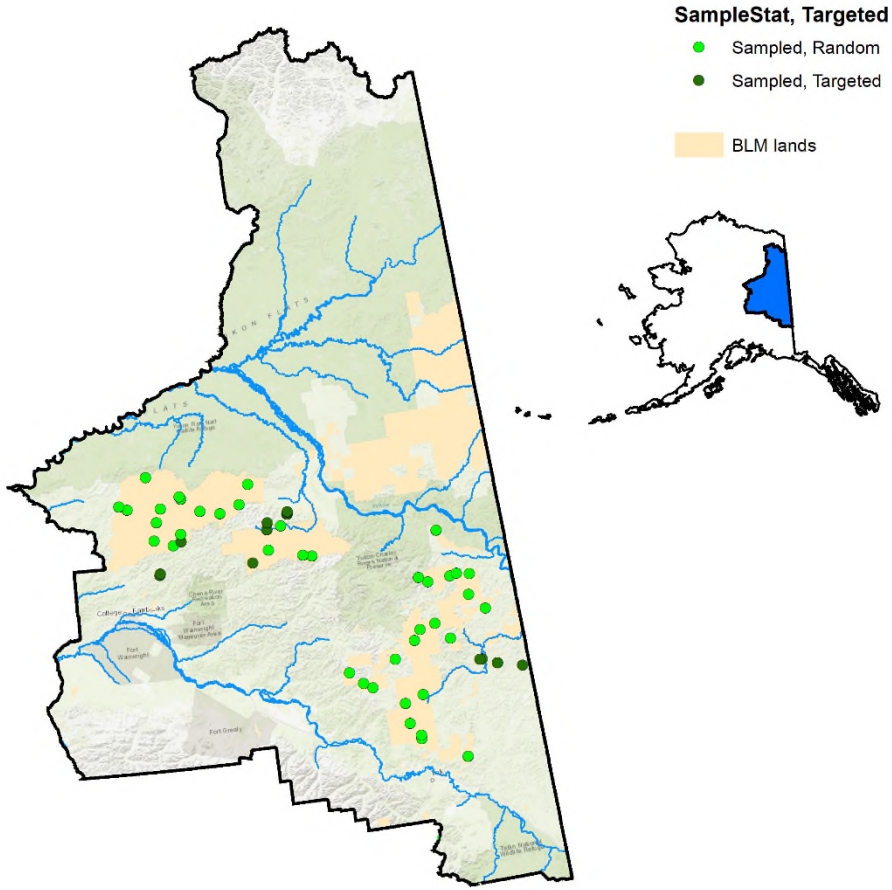

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Demonstration Project: Jack Wade Creek

Two years post-reclamation

2014

2016

BLM – AIM

Demonstration Project: Jack Wade Creek

Two years post-reclamation

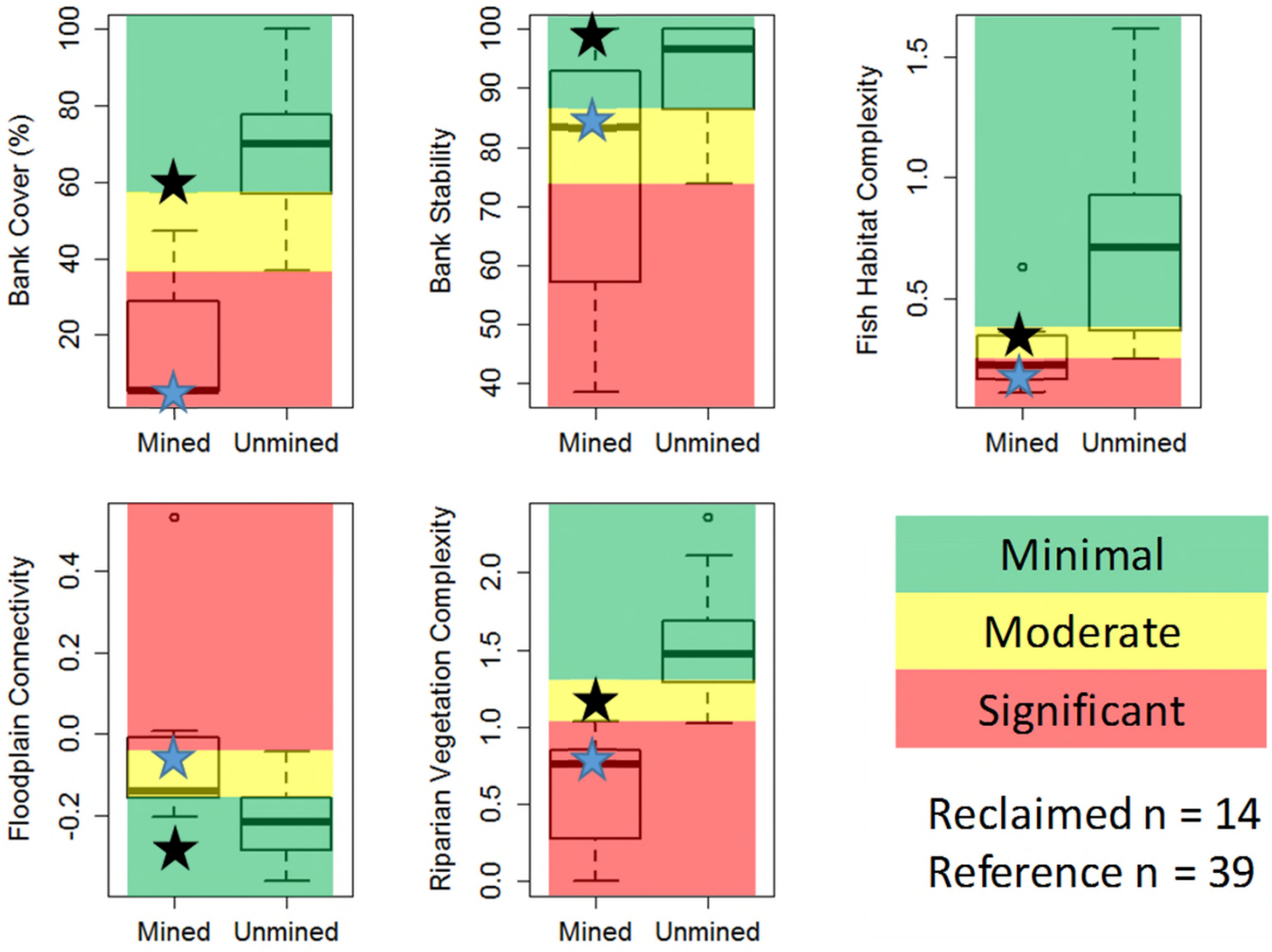
2014

2016

BLM – AIM

Demonstration Project: Jack Wade Creek

Natural channel design reclamation techniques resulted in a more stable, heterogenous channel with better habitat in < 4 yrs.



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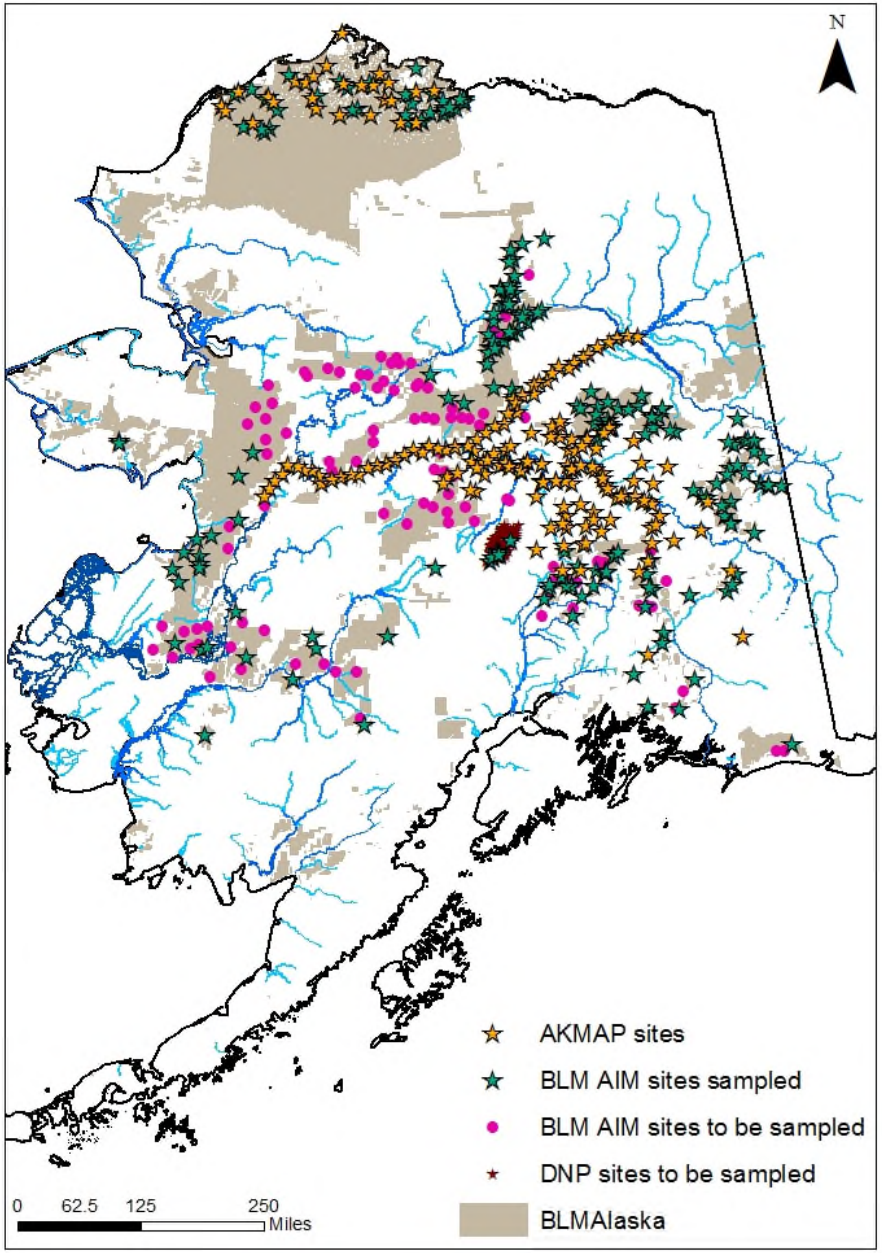
Conclusion

- Scalable data
- Collect data once and use multiple times
- Sharing of data between agencies
- Baseline conditions serve as a foundation for change detection on the landscape



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Additional Resources

- **OFR129 EIFO AIM report**
- **AIM National Aquatic Monitoring Framework Technical Reference 1735-1**
- **AIM landscape toolbox website**

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